

DETAILED ACTION

Response to Amendment

Withdrawn Rejections

1. The 35 U.S.C. 112, 2nd paragraph and 102(b) rejections are withdrawn due to Applicant's amendment in Paper # 7 (filed 10/30/03).

New Rejections

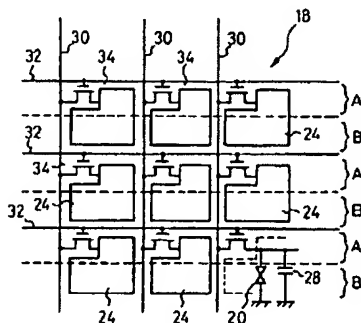
Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

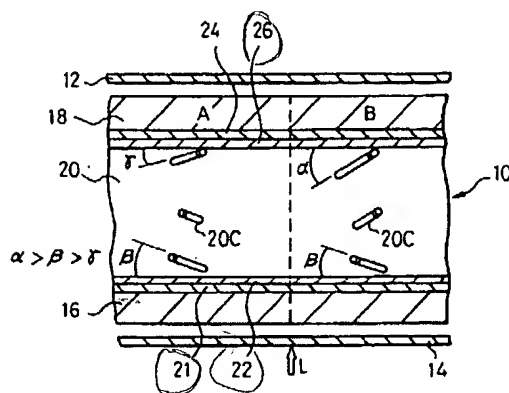
3. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koike et al. in view of Yoshino et al. (US 5,190,794).

Koike et al. has a liquid crystal display element (panel) comprising: a circuit array substrate 18 having pixel electrodes 24 (connected to an active matrix circuit) (column 11, lines 60-70). Fig. 6 below shows the circuit array substrate 18 (active matrix circuit).



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Below in Fig. 4, Koike et al. shows a circuit array substrate 18 having pixel electrodes 24, a counter substrate 16 (column 12, lines 1-2) having a common electrode 21, alignment films 22 and 26 formed on said pixel electrodes 24 and said common electrode 21, and a liquid crystal composition 20 charged in a gap between said circuit array substrate 18 and counter substrate 16 (column 11, lines 50-55).

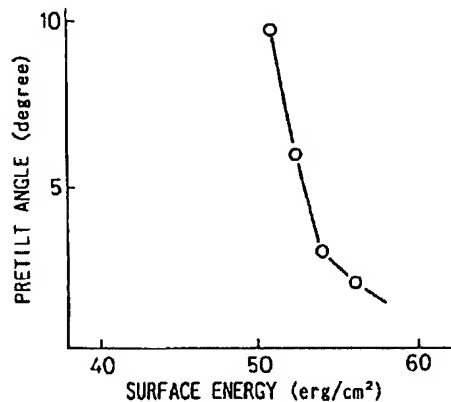


While Koike et al. teaches that the color filter layer (not shown) is provided under the common electrode 21 (column 11, lines 65-70), Koike et al. also states that it is possible to reverse the common electrode 21 and the pixel (element) electrode 24 (column 12, lines 1-2). Therefore it would have been obvious to one of ordinary skill to have interposed the color filter under the pixel electrode 24 instead of common electrode 21, which places the color filter between the pixel electrode 24 and the circuit array substrate 18.

Koike et al. teaches that an increase in surface energy of the alignment films reduces the pretilt angle, and that this is done by taking advantage of UV irradiation of the polyimide film (column 16, lines 1-15). The polyimide film before irradiation has a higher pretilt angle with the corresponding lower surface energy (column 15, lines 55-65). Thus Koike et al. teaches

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that low pretilt angle with the corresponding high surface energy for the alignment film is desirable.



The graph of pretilt angle versus surface energy above shows that the area of interest corresponding to the desired low tilt angle is the one with the surface energy of greater than 50 and less than 60 dyn/cm (erg/cm^2) which overlaps the claimed range of 51 to 60 dyn/cm. The prevention of image-sticking phenomenon and white or black turbid spots is the result of the low pretilt angle with the corresponding high surface energy of the alignment layer.

Although Koike et al. fails to teach that the color filter is made of resin, a resin color filter is common in the art as evidenced by Yoshino et al.

Yoshino et al. teaches that the color filter for use in a liquid crystal display is usually made of pigmented or dyed organic resin (column 1, lines 60-70).

Response to Arguments

4. Applicant's arguments with respect to claims 1-2 have been considered but are moot in view of the new ground(s) of rejection.